COLONY OF SEYCHELLES

ANNUAL REPORT

OF THE

DEPARTMENT OF AGRICULTURE

FOR THE YEAR

1951

Printed by the Head Printer.
At the Government Printing Office
Victoria, Mahé—Seychelles

20 JAN 1953

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Annual Report of the Department of Agriculture for the year 1951.

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Policy

Agricultural policy has been described in last year's report as proper land utilization and development of natural resources to the greatest good of the greatest number of inhabitants of the Colony. Fair progress has been achieved in implementing policy through the establishment of a Veterinary and a Forestry Division to the Departement, thus ensuring a wider field in agricultural extension services. The dissemination of agricultural knowledge and practice in a community where there are so few progressive planters is a difficult task. Backward economically the small holder keeps entrenched within his old and obsolete methods which can only be replaced slowly by proper agricultural practice.

The maintenance of coconut as the most important crop in the economy of the islands, and of cinnamon as a second crop is highly desirable, and improvement of these crops must be achieved by better husbandry than hitherto obtaining. Although the coconut palm will grow and flourish on a variety of soils, it should be cultivated within its ecological limits, as efforts to establish coconut plantations on poor lateritic hillside soils have failed completely. Coconut cultivation should be maintained and encouraged on the outlying coral islands, on the calcareous sandy soils (rendzina) of the coastal flats, and on the alluvial soils of the granitic islands. Its cultivation on poor lateritic hillside soils should be abandoned, and a better land utilization scheme should be adopted for these scils. Once the higher slopes of the granitic islands will have been restored to proper sylvicultural use, the development of the lower and middle slopes will remain the most important agricultural problem to an increasing population whose welfare depends entirely upon the management of its soil and crops. Excluding good cinnamon areas, the eroded lateritic soils of the knolls and hills forming the lower and middle slopes occupy a relatively large acreage, and are in urgent need of regeneration. They carry a very poor vegetation of coconuts with an understorey of stunted cinnamon. Coconuts show marked signs of faulty nutrition, indicating clearly an unsuitable environment for proper growth and development. The characteristic stem and foliage effects are universal on all these shallow soils. Stems are generally pinched and carry a chlorotic crown of small leaves. A large number of these palms produce inflorescences which never set. Some trees in the struggle for existence produce a few undersized nuts. Leaving alone their unproductivity, they have the disavantage of harbouring pest and disease for neighbouring healthy plantations, and of occupying land which could be put to better use. It has been proved that this type of land can be brought to a high level of fertility by terracing and gradual building up of the organic matter profile, and will grow food and fodder crops in rotation with a legume and the minor essential oil crop patchouli.

Considerable efforts are being made to improve animal industry gen rally. It is imperative that mixed farming be extended to all estates in order to maintain a certain level of fertility, and at the same time to increase milk, meat and pork production. The importation of Friesian and Sindhi cattle to replace poor creole stock has made very good progress. The policy is to grade up local stock and to encourage the Friesland –

Sindhi crosses which do well under local climatic conditions. Concurrently with improvement of stock the improvement of feed is receiving greater attention. Under present conditions maize bran and coconut cake, from bullock driven mills, form the bulk of the concentrates. Unfortunately this cake, produced under very primitive conditions, contains more than 25% of oil, and can only be fed in very small quantities in the concentrate mixture. When the modern oil plant is installed in 1952, a first class cake containing only 6% of oil will be made available, and this is bound to have a marked influence on the animal industry of the Colony.

SECTION 1. AGRICULTURE IN THE COLONY.

1. Meteorological Conditions.

Rainfall for the year 1951, recorded at the Port Office, Victoria, was 100.07 inches. This is well above the 50 years average, up to 1951, of 90.60 inches, For the second consecutive year rainfall has been normal, and considerably above the average of 71.54 inches of the drought years 1942 to 1949. However, as illustrated in the following table, which records rainfall and air temperature in Victoria, the distribution has been irregular, and though the total precipitation was above normal, a relatively severe drought was experienced during May, June and July. Inter-island distribution varied within wide limits. At Anse Royale, on the South East Coast of Mahe, the rainfall was 58.66 inches, while 114.66 inches were recorded at Bel Ombre on the North West Coast, and 77.06 inches at Anse Boileau on the West Coast. In Praslin, 84.42 inches of rain fell, and La Digue received 95.58 inches of rain.

The following table records the rainfall and air temperature taken at the Port Office, Victoria, on the main island of Mahe :—

Rainfall and Air Temperature, Victoria.

1951 Month.	Rainfall Inches.	Air Temperature °F Mean Max.	Mean Min.	Highest Max.	Lowest Min.
January	14.11	84	76	88	71
February	11.06	85	77	87	73
March	9.51	86	76	88	75
April	7.24	87	78	90	75
May	2.08	86	79	89	75
June	0.94	84	—	86	—
July	1.80	82	75	84	73
August	4.90	82	76	87	73
September	6.68	84	76	85	72
October	21.42	83	76	86	73
November	3.84	86	77	89	75
December	16.49	85	77	89	75
Total	100.07	—	—	—	—

The drought period May — July had some ill effects. Patchouli plantations which had been extended in all areas, following an increase in the price of this crop, suffered considerably from the drought. Several forest fires broke out in Mahe, but fortunately not much damage was done. However, some beneficial effects must be recorded in that fruit trees flowered profusely with good setting. The flowering of vanilla was excellent, and a very good crop is expected in 1952.

2. Coconut Industry.

The total quantity of copra exported during 1951, amounted to 7,559.809 tons, valued at Rs. 8,326,730. However, as recorded in the 1950 report, 1,260.018 tons forming part of the 1950 crop, and which had, been received in the copra sheds at the close of 1950, were exported in January, 1951. On the other hand, 274.091 tons of copra valued at Rs. 332,562, and forming part of the 1951 crop, had not been shipped at the end of the year and will be carried over in 1952. Thus the total production of copra in 1951 amounted to 6,573.882 tons, valued at Rs. 7,435,954. This is a record crop with a record value showing an increase of more than two million rupees over last year's value. The foilowing table records annual production of copra and value over the last three years :—

Year.	Production Tons.	Value Rs.
1949	6.300	4,409,968
1950	6,500	5,229,606
1951	6,574	7,435,954

The f. o. b. price per ton varied from £81 to £91. At the beginning of the year it was at £83/15 and reached the unprecedented peak of £91 at the end of the year. The local selling price ranged from Rs. 730 to Rs. 800 per ton. Sales were continued on the open market, the early consignments being sold in Sweden and the later consignments in East Africa, India and Mauritius.

A small export of coconuts totalling 40,000 nuts was shipped to the United Kingdom.

Examination of copra prior to export continued during the year, under the supervision of the Agricultural Chemist and of the Produce Inspector. 25 lots of copra were rejected as unfit for export, and crushed in mills for local use. On the whole the quality of the copra exported was very satisfactory.

3. Essential Oil Industry.

Although patchouli remained unsold during a large part of the year, fortunately cinnamon leaf oil enjoyed a very steady market at remunerative prices.

(a) Cinnamon Leaf Oil.

The cinnamon industry had a very busy time during the year. All the large distilleries and most of the cottage stills operated almost full

time, and 99 tons of cinnamon oil were exported. This is a record crop, and compares favourably with 97 tons in 1950. Favourable market conditions gave an impetus to this production drive. The local price of Rs. 14/— per kilo, at the beginning of the year boomed to the record price of Rs. 20/— per kilo, in March. During the rest of the year prices ranged from Rs. 12/50 to Rs. 18/50. In December there was a sharp fall to Rs. 12/— per kilo. The larger part of the oil was exported to the United Kingdom. Small quantities reached the Dutch and American markets.

It may be possible for the Colony to maintain production at this level for a couple of years more, but it is evident that this cropping rate cannot be maintained for many years. The cropping of cinnamon is on a 3 years' rotation, and it would be very unwise to crop at shorter intervals.

The control of quality of the oil, which was inaugurated at the end of 1950, was continued during the year. All containers deposited for export are sampled for analytical purposes prior to export. Certificates are issued for standard quality oil only. At the beginning of the year six small lots of oil were found to be slightly adulterated with kerosene, This control has been very satisfactory, and not a single case of adultertion was detected after the month of May.

(*b*) *Patchouli Oil.*

There was a large reduction in the export of patchouli oil, the quantity exported amounting to 2,286 kilos. This figure is barely half of the 1951 export which amounted to 4,616 kilos. There was a sharp fall in prices during the year. At the beginning of the year the local selling price which was at Rs. 150 per kilo fell to Rs, 95 in May and to Rs. 60 thereafter. During the second half of the year there was no demand for this oil, and when the drought May—July set in, the plantations which had been established during the 1950 boom were gradually abandoned.

Though patchouli is the stand-by peasant crop, it is unfortunate that high prices for this crop tend to jeopardise the cultivation of food crops and the keeping of small stock, chiefly poultry.

As during previous years strict control of the quality of the oil exported was maintained, No sub-standard oil was detected. Some 12 tons of patchouli leaves were exported during the year. The following table gives export figures and value of Cinnamon and Patchouli for the last three years :—

	1949		1950		1951.	
	Quantity Kilos.	Value Rs.	Quantity Kilos.	Value Rs.	Quantity Kilos.	Value Rs.
Cinnamon Leaf Oil ...	70,404	509,808	97,000	1,172,679	99,332	2,211,774
Patchouli Oil ...	1,664	63,777	4,816	769,919	2,286	332,299

(*c*) *Cinnamon Bark.*

207 tons of cinnamon bark were exported in 1951. Limited market and low prices have not been encouraging this small industry for many

years now. The local selling price ranged from Rs. 150 to Rs. 275 per ton. The slight advance in price towards the end of the year, however, coincided with very small demand for this spice.

Experimental distillations with a view to producing a more soluble cinnamon bark oil of marketable value were continued. The samples obtained were, however, unsatisfactory, and the Imperial Institute have suggested more experiments using scraped bark instead of unscraped, and it is hoped that a satisfactory oil will eventually be produced.

The following table gives export figures and value of cinnamon bark for the last three years :—

1949		1950		1951	
Quantity Tons.	Value Rs.	Quantity Tons.	Value Rs.	Quantity Tons.	Value Rs.
59	8,453	265	76,872	207	76,275

4. Vanilla Industry.

The following table records vanilla export and values :—

Year.	Quantity Kilos.	Value Rs.
1949	5,933	96,000
1950	770	8,987
1951	484	7,264

The 1951 export figure is the lowest on record for the last 20 years A sensitive market, low selling price, and irregular flowering of the vine handicap this small industry to a great extent. A large crop may, however, be expected next year, following the profuse flowering of the Praslin and La Digue vanilla plantations after the drought period May — July.

Local selling price ranged from Rs. 7/– to Rs. 10/– per lb. of cured beans.

5. Fishing Industry.

142 tons of salt fish valued at Rs. 82,415 were exported in 1951. The following table records export and value over the last three years :—

Years	Export Tons.	Value Rs.
1949	200	78,016
1950	148	61,696
1951	142	32,415

The bulk of the salt fish was exported to East Africa. A fishing base has been established by the Colonial Development Corporation at St. Anne Island, to produce salt fish for export. The boats of the Corporation fish exclusively on the untapped supplies of the outlying banks, chiefly the large Saya de Malha bank, South East of Mahe. Small consignments of salt fish were regularly shipped to East Africa by the Corporation boats. It is hoped that with further development of the scheme, a large increase in the production and export of fish may be obtained.

On the whole 1951 was a very bad year for fish. The inshore fisheries were unable to supply the demand of fresh fish to the population. Fishing on the outlying banks was also very poor. The North West fishing season, with its long periods of calm weather, was below all expectations, and the scarcity of fish was badly felt in many areas.

It is believed that this scarcity was mainly due to some natural cause affecting fish population and migration to the inshore fisheries as well as to the extensive outlying fiishing banks. It may well be that the situation was made worse by a reduction in the number of fishermen actually engaged on fishing operations. Unusually rough weather during the South East made it impossible for small crafts and pirogues to put to sea, so there is no doubt that some hardship was experienced in the poorer classes of the population where fish is the staple protein in the diet. In 1944 the same conditions prevailed, and it is quite possible that fish production has its peak and lean years.

6. Other Industries.

The following table gives the export figures and value of the produce of minor industries of the Colony for 1951 :—

Export of Guano and fishery Products.

Product.	Quantity	Value Rs.
Guano	4,475 tons	155,671
Calipee	2,254 kilos	30,194
Tortoise Sbell	1,629 ,,	20,545
Birds' egg Yolk	11,030 ,,	14,080
Shark Fins	4,553 ,,	10,834
Turtle Oil	481 ,,	4,822

7. Conditions on Estates,

The labour situation was not entirely satisfactory during the year. In February 700 labourers and artisans were recruited for service overseas in the Pioneer Corps, thus bringing the total recruitment to 1,300 men. It is felt that the stage has been reached when no more agricultural labour should be removed for overseas service, if agricultural activities are are not to suffer.

Record prices for coconut and cinnamon encouraged some planters to improve conditions on their estates. More attention was paid to the upkeep of coconut plantations than generally obtaining, and it is gratifying to note that a few estates even adopted mechanical cultivation, followed by manuring with Potash fertiliser.

Cinnamon plantations were heavily cropped, and distilleries kept busy throughout the year. Untapped areas, in almost inaccessible places, were cropped, as higher prices were offered to the labour engaged in picking and transporting leaves.

8. Pests and Diseases.

(a) *Rats.*

The position remains unchanged for this pest of coconut. In spite of regular extermination campaigns rat infestation still remains an important problem.

Another batch of 15 barn owls were imported from East Africa in an endeavour to extend biological control, and at a meeting of the Agricultural Board, held in December, it was agreed to liberate the owls in Mahé, as members felt that isolated liberations on small coral islands did not give a fair chance for the owls to establish themselves successfully. The owls were liberated at Union Vale, in the North of Mahe, where rat damage is known to be extensive.

(b) *Melittomma insulare*, Fairm.

Melittomma remains a serious pest of coconut throughout the granitic islands of the archipelago. It does not occur on the coral islands of pure oceanic formation. The island of Praslin has been suffering for some years from very heavy attacks of the pest resulting in large losses of palms and a great reduction in coconut production. In Mahe certain areas are lightly invaded by *Melittomma*, but other areas, south of the island, are large centres of infestation.

Towards the close of the year it was decided that research work on *Melittomma* should be directed on all fronts — biological, cultural and insecticidal — to ensure maximum chances of success, and funds were earmarked for a *Melittomma* scheme in 1952.

(c) *Oryctes Monoceros Ol.*

It was possible to receive another batch of Scolia Wasps from Zanzibar through the courtesy of the American Entomologist, Mr. L. H. Krauss, who kindly arranged for the collection and shipment of 60 wasps in November during his short visit to Zanzibar. This small consignment travelled very well, and it was possible to liberate 48 live and active wasps in a highly infested area at La Digue. The Zanzibar species is *Scolia ruficornis*, and it has been suggested that provided its sting is not too severe for the local *Oryctes*, its establishment should be successful.

9. Food Production.

The production of foodstuffs for local consumption remains unsatisfactory. An unusual shortage of fish, coupled with the usual shortage of meat, made conditions difficult for the poorer classes of the community, and proved to show that a reserve of ground provisions is the answer to offset such difficulties.

Active propaganda was undertaken to convince the general public of the importance of growing more food crops. Large scale demonstra-

tions in food crop cultivation were continued on the Grand Anse Estates, and truck crops marketed in Victoria. Vegetable demonstration plots were maintained at Union Vale and Mamelles, in the town area, in order to encourage market gardening and to facilitate extension work. A small experimental vegetable garden was started at La Digue.

The distribution of graded livestock chiefly cattle, pigs and poultry was continued. Expansion of animal industry is an important aspect in increasing domestic economy, and must be encouraged in all districts.

SECTION II. WORK OF THE DEPARTMENT.

1. Veterinary Division.

Introduction.

The duties of the division in order of importance are :—

(i) Prevention and control of diseases of livestock including investigation and research

(ii) The attendance at the Veterinary Station.

(iii) The management of the Government Dairy, Union Vale, and care of livestock on Government Estates.

(iv) Poultry development programme — Construction of a Central Poultry Farm and two demonstration units on outlying islands.

(v) Slaughtering of animals and green turtle industry.

(vi) Distribution of stock feed.

(vii) The enforcement of quarantine regulations, construction and supervision of the quarantine stations.

(viii) Advisory work in connection with Animal Husbandry extension programme.

In addition visits were made to attend cases of general nature amongst privately owned livestock.

Since the Colony is free from contagious and infectious diseases of livestock, every possible precaution was undertaken to prevent the importation of new diseases. To effect this a close examination of imported animals was carried out on board ship, and later at the quarantine stations.

Extension programme in connection with disease control and Animal Husbandry advisory work among livestock owners was undertaken, particularly in relation to breeding, feeding, and management of cattle, poultry and pigs.

Advice was sought on dipping tanks as well as first aid.

The training of local personnel in Veterinary and Animal Husbandry was started at the Veterinary Station.

Animal Husbandry.

Government Dairy, Union Vale.

The herd consisted of Friesians, Sindhis, local and cross (Sindhi x Friesian) cattle. The strength of the herd at the end of the year was as follows :—

	Class of Stock.	*Number.*
Cows :	Friesians	49
	Sindhi	2
	Local	9
	Cross (Sindhi x Friesian)	2
Bulls :	Friesian	2
	Sindhi	2
	Sindhi (Local born)	1
Young Stock :	Cross heifer-calves	11
	Cross bull calves	5
	Friesian bull calves	3
Miscellaneous Stock :	Donkeys	2
	Goats (Jumnapari)	5

The health of the stock was satisfactory. Fortnightly dippings were carried out to control tick infestation. Two sterile cows which did not respond to treatment were disposed of.

Milk Yields.

The details of milk yields are indicated below :—

Total milk produced during the year	= 200,254	pints
,, sales to public	= 180,347	,,
,, fed to young stock	= 19,907	,,
Average production of milk per day	= 548	,,
,, number of cows in milk	= 55	,,
,, production per cow during the year	= 3,708	,,
,, daily production per cow	= 10	,,

Milk Records

A detailed system of records for production and progeny was introduced and was maintained up to date.

Four cross heifers (Sindhi x Friesian) are expected to calve soon when a comparative performance of Sindhi cows and crosses under a variety of conditions will be studied.

Breeding Policy and Future Extension.

The general policy of crossing Sindhi with Friesians and the breeding of pure Sindhi cattle was continued. On the basis of production during the past five years, the cows were classified under A, B and C grades. Heifer calves born of grade A and B cows were reserved for effecting future replacements. The cattle importation scheme under Colonial Development and Welfare Funds ends in 1954, as such the rearing of heifers from graded cows is necessary to build up a herd of high yielding cross strains, which would cause an increase in milk production in years to follow. So far 38 heifers are earmarked and are progressing satisfactorily.

Young Stock.

Of the 47 calves born during the year, 21 were males and 26 were females. Six deaths amongst calves were recorded. Seven bulls and three heifers were sold and the remaining were transferred to St. Anne Island for rearing. The weighing of calves at birth, weaning soon after birth, and earmarking by Danish system were practised.

Additions to the Herd.

18 Friesian heifers in calf were imported and a Friesian cow was purchased locally.

Sale of Milk.

As usual the milk after cooling and bottling was sold to 265 families, hospital and other Government institutions. The pasteurisation plant arrived at the end of the year, and will be installed in 1952.

Cattle on Government Estates.

Cattle were stationed at various estates for milk, breeding and manurial purposes. The stock on each estate at the end of the year was as shown hereunder :—

St. Anne Island	=	59
Anse Boileau Estate	=	25
Grand Anse Estate	=	44
Souvenir Estate	=	16
Foret Noire Estate	=	6
Curieuse Island	=	9

St. Anne and Anse Boileau Estates were used as dry farms for the rearing of young stock transferred from the Government Dairy. A Sindhi herd of 23 head was stationed at Grand Anse. A total of 18,284 bottles of milk was produced on West Grand Anse Estates (Anse Boileau, Grand Anse and Souvenir) of which 4,943 bottles were supplied to children's creche and as ration to farm staff, 1,248 bottles were sold to public, 3,809 bottles were supplied to hospital and 8,284 bottles were fed to young stock. Fortnightly dippings were carried out to control ticks. In addition 250 privately owned cattle were dipped. The cultivation of maize and perennial grasses was also continued. Sindhi and Friesian bulls were stationed on West Grand Anse Estates, for services to privately owned cows. It is proposed to increase the livestock on estates, with a view to obtaining milk and manure.

Services by Pedigree Bulls.

The policy of grading up the local stock by breeding with Sindhi or Friesian bulls was continued. As far as possible services were restricted to cows in fair condition. Bull units functioned at 6 important livestock centres and a total of 140 privately owned cows were served. In addition a Sindhi and a Friesian bull were stationed at Barbarons Estate and La Digue respectively. The bull at Praslin was disposed of and replaced by a Sindhi bull.

Poultry.

The poultry development scheme was started to meet with the acute shortage of poultry and eggs in the Colony.

The construction of a central farm was completed and later breeding stock was imported from East Africa. Poultry breeding was carried out at two centres, from which pure stock and hatching eggs were sold The flock at the farms being old was culled. The policy of breeding Rhode Island Reds and crossing local birds with Rhode Island Red Cockerels was continued. The farm consists of the following :—

Breed.	Laying Hens.	Cockerels.	Pullets.	Young Stock.	Total.
Rhode Island Red	21	6	3	23	= 53
Crosses	21	—	—	—	= 21
Local	21	—	—	—	= 21
	63	6	3	23	= 95

9 Rhode Island Red Cockerels and 27 hens were sold to the public. The egg production was 3,804, of which 520 were sold for hatching and the balance supplied to hospital and other institutions. The hatching was tried with broody hens and the hatchability was poor. Preliminary trials with incubator were encouraging.

The establishment of a main breeding stock at the Central Poultry Farm was completed on arrival of 50 Rhode Island Red birds from East Africa. A 60 egg Incubator was installed late in the year to further the poultry development scheme. 60 eggs imported from Mauritius were hatched to produce 32 chicks. Training of local personnel in Poultry Husbandry was continued.

Pigs.

The breeding of large whites, large black and crosses was continued on St. Anne, Curieuse and Anse Boileau Estates. At present the stock consists of the following :—

Breed	Boars	Sows.	Gilts.	Piglets above 2 mths.	Piglets under 2 mths.	Total
Large White	3	13	—	42	15	= 73
,, Black	1	2	9	1	12	= 25
Crosses	3	3	5	15	7	= 33
Total	7	18	14	58	34	= 131

Twenty-six (26) sows farrowed to produce 251 piglets, of which 218 were weaned. 181 weaned piglets were sold for breeding and slaughter purposes. A pig sty for fattening weaned piglets was constructed on St. Anne Island.

Bee-Keeping.

No apiary was maintained by the Department. A large number of apiaries were maintained on private estates. An enthusiastic apiarist

imported queen bees from Italy which are reported to be progressing well. Advice on modern bee-keeping was made available and this resulted in ordering bee-keeping appliances from overseas.

Beef.

The slaughtering of cattle was controlled under permit, and accordingly 359 head (61 cows and 298 bulls) were slaughtered on the main and outlying islands. Beef continued to be in short supply. This is mainly due to stock shortage, arising out of indiscriminate slaughtering during previous years and lack of interest in livestock breeding. All female animals were examined prior to the issue of a permit. Four prosecutions of unauthorised slaughter were undertaken by the Police Department and convictions were secured.

Sheep and Goats.

A small batch of Jumnapari goats was maintained at the Government Dairy. Two kids were born during the year. A Jumnapari goat was transferred for breeding purposes to Aldabra Islands, where a large number of goats still exist. Goat-keeping seems to be ideal under local environments and to effect this view, 20 goats are to be imported next year.

Green Turtle Industry.

The green turtle fishery was carried out on the islands of Aldabra Group, with a view to provide fresh turtle meat to the population in Mahé. As usual the turtles after harpooning were kept in the ponds, till transport to Mahé. A maximum number of 90 turtles were kept in the pond and the excess was slaughtered to prepare calipee for export and quitouze for home trade. 434 turtles were received during the year and the mortality during voyage was 15% which was less than previous years owing to avoiding delays on voyage and a proper stowage on board. Turtles were distributed on basis of population on the main and outlying islands, for slaughtering and sale of the turtle meat with fat, under the supervision of the Department and by local bodies elsewhere. This system worked satisfactorily though there was a decrease in revenue on previous years. The turtle pond at Victoria was cleaned and repaired. Provisions for a shed and free tidal movement of water were provided. Suitable conditions prevailed at the pond, which was subjected to regular inspection. Turtles were fed with sea weeds and the mortality in pond was insignificant. The revenue on account of turtle industry was Rs. 25,723.31. In addition quitouze, flippers, calipee, head and tails, obtained from outlying islands were sold at the local markets.

Samples of oil extracted from heart and mesentric fat by two different methods were sent for Vitamin assay.

Stock-Feed.

Maize bran and poonac (coconut cake) were main items of stockfeed. Of the 2,684 bags produced at the local maize mill, 338 bags were sold to stock owners. The balance of 2,346 bags, 154 flour bags and 658 bags of crushed maize were supplied to the Dairy and other livestock establishments. Mineral salts constituted a regular feed. It is proposed to import stockfeed to meet the demand of stockowners.

Animal Health.

(a) *Veterinary Station.*

The Veterinary clinic at the Agricultural Headquarters was shifted to the new building at Union Vale. Instruments and medicines were received during the year. 458 clinical examinations and treatment of various classes of animals were carried out. 30 castrations by Burdizoos method, and 40 castrations by open method, caesarian in a cat and two minor operations on dogs were performed.

(b) *Diseases of Livestock.*

No outbreaks of contagious diseases were detected in cattle, pigs or dogs. A single case of Cowpox was detected and prompt isolation and disinfection measures helped to check the further spread of the disease. The diseases were of digestive, reproductive and parasitic origin. Mastitis, though not common, was detected on three farms and the further spread was controlled by preventive and therapeutic measures. Tick control campaign was continued by persuading the stock owners to avail of the free dipping services. Two sterile heifers were subjected to Stilboestrol treatment and were bred no sooner the heat was induced. The results of treatment are awaited.

(c) *Diseases of Poultry.*

(i) Fowlpox was detected on several farms and the mortality ranged from 5 to 40%. A campaign to control further spread of the disease was carried out by visiting infected premises and by advising segragatory and prophylactic measures. 413 birds were vaccinated and the method of vaccination was demonstrated to several breeders

(ii) The disease of obscure origin was found to be due to birds eating decomposing animal tissue, as several of them responded after the surgical removal of the crop-contents, which consisted of maggots and other animal tissues. As a preventive measure, feeding of animal proteins was advised.

(iii) Eye worms in poultry were controlled by general hygienic methods and by treatment with 2% creolin collyrum.

Investigation.

(a) 97 smears, 51 faecal samples, 4 milk samples and 7 other specimens were examined for diagnostic purposes. In addition, 2 biological tests and 23 post mortem examinations were performed.

(b) A study into helminthic infestations in livestock was continued and a check list is shown hereunder :—

Cattle	:	Ascaris and Trichuris Sp.
Poultry	:	Oxyspirura, Ascaris, Heterakis, Raillietina and Acanthocephala Sp.
Dogs	:	Diplidium Sp.
Pigs	:	Ascaris and Stephanurus Sp.

(c) The ticks collected from local and imported cattle were identified as : *Uro boophilus fallax*, *Hyalomma Triansiens*, and *Rhipicephalus Simus*.

(d) A preliminary investigation into parasitic infestation in pigs was carried out at the suggestion of the Executive Council. 50 faecal samples collected from different parts of the main island were examined. It was found that infestation with *Balantidium* and *Giardia* exist in many places while that with *Ascaris*, *Strongyloides* and *Stephanurus* occur to a mild extent.

(e) To study the incidence of Tuberculosis in cattle 156 animals at the Government Dairy and estates were subjected to tuberculin tests. Four reactors were removed from the herds. It is proposed to extend the tuberculin testing of cattle with a view to build up healthy herds.

(f) Itching conditions in pigs, scaly legs in poultry, and skin diseases in dogs were treated

Quarantine.

The construction of a cattle shed with other requirements was completed on Long Island. Necessary repairs to the kennels on Hodoul Island were carried out by providing a roof and independent drain to kennels and runs by the construction of a wall all around the island. Such measures were necessary to prevent escape of animals during the quarantine period. 18 Friesian heifers, 2 Jersey cows, 60 poultry, 1 foal, 2 Siamese cats, 11 chicks, 6 rabbits and 4 Queen bees were imported during the year and were placed under observation for periods required under animal (Diseases and Importation) Ordinance of 1950.

No deaths occured amongst imported animals at the quarantine stations. Frequent spraying of cattle and gammexane dusting of poultry and other animals were carried out. Blood examinations on alternate days have been negative.

Animal Exports.

The following exports were effected during the year :—

15 Land Tortoises (Testudo elephantina)
3 Local Poultry.
2 Siamese Cats.
1 Dog.

(DR). D. K. DESAI,
Veterinary Officer.

2. Forestry Division.

Progress.

Progress in the Reafforestation Scheme during 1951 does not compare favourably with that anticipated, but when reviewed from all aspects, progress cannot be said to be unsatisfactory under the circumstances, The total acreage planted up to the end of this year amounted to 300 acres.

The year began well with three and a half months of good planting weather, but due to the difficulty experienced in recruiting suitable supervisory staff, together with the further period required by local government for the approval and appointment of the selected candidates, it was not until April that all the supervisory posts were filled. Thus only the forest areas of Sans Souci and Niol were in a position to take advantage of the rains.

During April, one Senior Forest Ranger was based at Sans Souci (to be personally responsible for the Central Forest Area) and three Forest Rangers were allocated to Niol, Grand Anse and Praslin areas respectively. These formed the nucleus of the supervisory staff and enabled work to begin at Grand Anse and Praslin, whilst work at that time being carried out at Niol by a skeleton labour force, received considerable impetus upon the arrival of a Forest Ranger.

The formation of nurseries in the new areas of Grand Anse Mahe, and Newcome, Praslin, proved to be very slow, due to the great difficulty experienced in obtaining labour. Le Niol area did not prove so difficult and work proceeded at a more satisfactory pace. Sans Souci, where a new nursery had been commenced in January, was by April in full production.

Unfortunately before hardly any stock from these newly formed nurseries could be planted, a drought set in which seriously handicapped planting efforts over a period of approximately four months, during which time much anticipated acreage was lost.

In Praslin, planting was further delayed into November by lack of rain. This fact coupled with a quite inadequate labour force has materially reduced the planting programme for 1951 in that area.

Fortunately the rains came early in Mahe, and by September, planting was once again in full swing, but limited by the poor labour force available. Indeed, labour shortage is by far the most restrictive influence on progress yet encountered. It is hoped that improvements in this direction will be apparent in 1952.

Sylviculture.

Results from plantings to-date have been very encouraging, and establishment percentages high in all but the poorest areas. The total range of species planted has been considerably increased by incorporating

more species already existent in the Colony, and the importation of seeds from abroad with which to establish experimental stands. To-date, seeds of the following species have been imported for trial : —

India	:	*Dalbergia latifolia.*
		Gmelina arborea.
Mauritius	:	*Swietenia mahagoni.*
Jamaica	:	*Cedrella odorata.*

Of these, Dalbergia proved infertile seed, but the other three species germinated well and a considerable number of seedlings will be available for planting in 1952.

Experiments with Breadfruit (*Artocarpus incisa*) propagation proved highly successful, the method used being an adaptation of a "solar propagation" method described by J. H. JULIEN in "Revue Agricole", 1945. The percentage of root cuttings to strike being approximately 75%.

During 1951, $3\frac{1}{2}$ acres were planted with this species in accordance with the 1950 Working Plans.

Sandragon (*Pterocarpus indicus*) cuttings also received much attention after the discovery of a stand of approximately $2\frac{1}{2}$ acres in extent of very fine 25 year old trees. These trees had grown from stakes inserted into the ground fairly closely throughout the area. Two of the trees were felled and produced between them 575 running feet of $1\frac{1}{2}$" x 8" heartwood madrier, some of the madrier measuring 42 feet in length.

Sandragon cuttings strike well, produce a very quick canopy, are cheap to establish, and should materially reduce weeding costs. As can be seen from the above observations they are also capable of producing a very reasonable volume of good quality timber at an early age. Needless to say, it would not be a good policy to grow this timber on such a short rotation, but it is gratifying to know that thinnings of this age will contribute considerably towards future timber supplies, and will materially assist to defray future upkeep costs.

Planting and Species Distribution Record (acres)

Forest.	Total acreage.	Adananthera pavonina.	Calophyllum inophyllum.	Heritiera littoralis.	Albizzia molu canna.	Artocarpus communis.
Val Riche and Sans-Souci.	167½	60¾	8¾	3¼	4¾	3¾
Niol	53	35	1¼	2	4¼	⅓
Grand Anse	46½	11⅔	4½	9	—	—
Newcome Praslin	37	2	1¼	—	—	—

G. Germination.
V. Viability.

Seed Germination and Viability Record.

	G.	V.	G.	V.	G.	V.	G.	V.	G.	V.
	22 dys.	72%	24 dys.	93%	23 dys.	92%	9dys.	100%	19 dys.	54%

Planting and Species Distribution Record (acres) Continued

Forest.	Total acreage.	Albizzia lebbeck.	Pterocarpus indicus.	Terminalia catappa.	Tecoma leucoxylon.	Casuarina equisetifolia.
Val Riche and Sans-Souci	167½	4⅜	35¼	12	20½	10
Niol	35	—	4½	3	—	—
Grand Anse	46½	—	8	10	—	—
Newcome Praslin.	37	1¼	—	3½	—	—

G. Germination.
V. Viability.

Seed Germination and Viability Record.

	G.	V.	G.	V.	G.	V.	G.	V.	G.	V.
	23 dys,	57%	8 dys.	to bud.	24dys.	82%	17 dys.	95%	28 dys.	70%

Planting and Species Distribution Record (Acres) Continued

Forest.	Total acreage.	Sandoricum indicum.	Artocarpus incisa.	Intsia bijuga.	Chrysobalanus icaco.	Tectona grandis.
Val Riche and Sans Souci	167½	3	1	Supplies of seed difficult but approx. 150 seedlings raised.	—	¼
Niol	53	3	—	—	—	—
Grand Anse	46½	1⅓	2	—	—	—
Newcome, Praslin.	37	—	—	—	29	—

Seed Germination and Viability Record.	G. V.	Root Cut.	G. V.	G. V.	G. V.
	17 dys. 4%	45 dys.	25 dys. 60%	28 dys. 80%	39 dys. 4%

G : Germination.
V : Viability.

Planting and Species Distribution Record (Acres) Continued

	Total acreage.	* Cedrella odorata.	* Swietenia Mahagoni.	* Gmelina arborea.
Val Riche and Sans Souci.	167½	—	—	—
Niol	35	—	—	—
Grand Anse	64½	—	—	—
Newcome, Praslin	37	—	—	—
Seed Germination and Viability Record.		G. V. 12 dys. 75%	G. V. 17 dys. 75%	G. V. 27 dys. 50%

Rehabilitation Praslin.

In addition to the planted areas 5 acres of scrub woodlands were rehabilitated into promising plantations.

TOTAL ACREAGE: 304⅓ acres.
No. of trees planted: 304,000

* Newly imported seed. No stock yet planted.

Research.

Of the elementary experiments made, the following points have been noted :—

Planting.

From a relatively early date the merits of Bastard Pit planting asserted themselves. Not only did the Bastard Pit method increase planting figures per man by 750% but results from the trees themselves have kept pace quite well with the old style, a very costly full pit method. Thus early in 1951 a complete switch to Bastard Pit planting took place, with very gratifying results. Some of the earliest *Albizzia molucanna* planted by this method exceed 13 feet in height, whilst the earliest *Adenanthera pavonina* exceed 7 feet on an average.

Spacing.

After preliminary experiments with spacings of 6 feet ranging to 11 feet, a standard spacing of 6–7 feet has been adopted for most species. It may be argued that for fast growing species, this spacing is wasteful, but it does give complete soil cover in one year to 18 months with the fastest growing species, and consequently very much reduces weeding costs.

This Colony has unfortunately been afflicted with that noxious weed Gazontrail (*Panicum* Sp.) which threatens to produce very high weeding costs. Fortunately it is an avid light demander and cannot stand much shade, thus it is felt that the extra costs which arise when planting at 6 x 6 feet or 7 x 7 feet spacing are more than offset by an early and complete freedom from gazontrail once the canopy has been formed.

Judging from present observations most species are capable of closing canopy at 6 feet to 8 feet spacing within 2 — $2\frac{1}{2}$ years, the majority considerably sooner — 18 — 20 months.

Treatment.

Mulching and forking at intervals after planting, until the canopy closes has been found to be a very important contribution to success, as this keeps the young trees free from gazontrail and stimulates vigorous growth. During 1951 many old areas were located which had once been planted, but had not received any further treatment. The result was staggering, in some instances, badly checked and almost dead 10 year old trees were found with an average height of 18″ — 2 ft. Other instances showed Agati trees of 18—20 feet which had become checked and stag-headed by an 18″ deep mat of gazontrail growing about their base. Upon the removal of this weed and a light forking and mulching, the few selected trees showed an outstanding recovery. When compared with their untreated neighbours the value of further treatment may readily be appreciated.

Quite early during the year it was noticed that seedlings planted in exposed soil suffered a distinct check, and often wilted for several days, in some cases actually dying. This was after examination, attributed to the great surface heat radiation which the granitic soil gives, aided in some cases by the reflection of the sun's rays from silica crystals. These conditions were a strong deterrent to quick establishment causing undue transpiration and fatigue to the seedlings, and sometimes killing by scorching the collars.

The remedy adopted was to place a circle of vegetable matter about twice the size of a dinner plate and about $\frac{3}{4}$" deep around each plant. Though not 100% effective, a recent census shows gratifying results.

The percentage of establishment has not made any phenomenal rise, but it is definitely better, whilst the strong growth of seedlings from the outset, with very little check is quite noticeable, and makes the slight extra work involved well worth while.

Direct Sowing.

Direct sowing experiments, while very encouraging from a germination point of view, received much setback from the attentions of the Tung Rat. This rat, together with the giant snail, constitute the main enemies of young plantations and frequently in spite of poison campaigns cause extensive damage.

It would appear at present, that the safest time for direct sowing is during the South East monsoon when the Tung Rat partially hibernates. This season, however, does not afford the best conditions to young seedlings and losses from drought, sun-scorch etc., are high. Thus the only solution at present is to continue planting and delay any further direct sowing until an effectual control of the Tung Rat has been discovered.

Fire.

Fires continue to be a public menace, and the attitude of the general public towards them leaves very much to be desired. A striking example of this deplorable attitude occured during a large fire which was threatening to cross into Government Crown Lands. Some members of the public working nearby when requested to give fire fighting assistance openly refused to do so, with the result that the fire was able to cross the boundaries and further destroy 10 acres of Government Crown Land vegetation.

Fortunately the above fire was the only one to enter Government Crown Lands during the year. This fire started on Maillet estate which adjoins Government Crown Lands. It quickly became uncontrollable and crossed the boundary into Government Crown Lands where it burned 10 acres of bush vegetation before being controlled and extinguished.

It is pleasant to record that throughout the period of the conflagration the Senior Forest Ranger and forest labourers, assisted by the Police, showed great initiative when fighting the fire and set a splendid example to the public in tenacity of purpose. The fire destroyed in all, 60 acres of vegetation.

Within a month a second fire started on a private estate bordering Government Crown Lands, but this time it was quickly controlled and confined to two or three acres of steeply sloping hillside, where it burned itself out before crossing to Government Crown Lands. Fire is the most serious source of loss to public property, and fire risk must be borne in mind at all times. It is to be hoped that a more serious view of fires will be taken in the future, if the forests at present being established are not in turn to become charred areas. A stricter measure of control where burning is concerned is advocated, with much heavier penalties where carelessness or neglect can be proved to be the cause of a fire. The past history of serious conflagations in this Colony is probably unparallelled elsewhere by islands of similar size.

Building and Constructions.

During the year the following buildings were erected: —

Forest.	No. of construction.	Permanent Houses.	Temporary Houses.	Wards.	Fire Store.	Tool Store.	Seedlings Sheds.	House Repairs.
Sans Souci.	14	3	—	—	1	1	9	1
Niol	8	—	1	—	—	1	6	1
Grand Anse	8	-	—	1 (6 rooms)	—	1	7	—
Newcome, Praslin	9	2	4	—	—	1	2	—
Total of constructions.	40	5	5	1	1	4	24	2

Houses or wards for labour are very essential if an adequate labour force is to be recruited, and will account for a considerable portion of the Building, Tools and Equipment Vote in the years ahead. There appears to be a pronounced shortage of male labour and the labourers that are available are difficult to employ in most cases unless they can be promised a house near the forest areas.

UTILIZATION.

The following produce was prepared during 1951 :—

Forest	Running feet.	Albizzia planks.	Albizzia Madrier.	Cedar planks.	Cedar posts.	Agati planks.
Val Riche &						
Sans Souci	—	10,943	90	1,300	1,633	—
Niol	—	6.773	3,140	—	1,259	1,294
Grand Anse	—	713	3,020	417	—	—
Praslin	—	8,820	2,756	—	5,200	—
Grand Total		27,249	9,006	1,717	8,092	1,294

Forest	Running fect	Agati madrier	Sandra-gon madrier	Eucalyp-tus madrier	Badamier madrier	Rafters.
Val Riche &						
Sans Souci	—	—	—	1.245	—	3,200
Niol	—	4,967	—	—	—	4,638
Grand Anse	—	—	310	—	—	540
Praslin	—	—	—	—	50	—
Grand Total		4,967	310	1.245	50	8,378

The following produce was prepared during 1951 : — (Continued).

Forest	Fencing stakes	Cords	Firewood	Tins of charcoal	Tins of Capucin Charcoal	Kilos of Cinnamon.	Latanier Leaves.
			pkts.			Kgs.	
Val Riche & Sans Souci	275	281	407	3,228	4,106	23,132	1,450
Niol	300	18½	—	—	—	2,605	7,275
Grand Anse	—	—	—	5,762	—	—	
Praslin	—	—	—	504	—	—	
Grand Total	575	299½	407	9,494	4,106	25,737	8,725

SUMMARY

Total mixed madrier	15,578	running feet
do do planks	30;260	do do
do Rafters	8,378	do do
Fencing stakes	575	units
Cords	299¼	
do Firewood	407	packets
Charcoal (ordinary) do (capucin)	13,600	tins
do Latanier leaves	8,725	units
do Cinnaman leaves...	25,737	Kilos.

Valley De Mai.

In view of the fact that re-afforestation has commenced in Praslin, it was decided that the Valley de Mai should be taken over by the Forest Ranger in charge of the re-afforestation of Praslin, with a view to future improvement.

In the past, a number of exotic trees were introduced which have established themselves very successfully with the result that the endemic vegetation of this unique valley is being seriously threatened by the more prolific, and faster growing introduced species. Unless steps are taken, this beautiful valley will tend to degenerate into an Albizzia plantation.

The present policy will be to remove gradually all the exotic vegetation and replant the resultant blank spaces with Coco-de-mer, Pandanus, etc., in an effort to restore the valley to its original vegetation.

To-date 928 Coco-de-mer have been planted and many hundreds of seeds of *Pandanus Seychellarum* and other endemic palms have been sown over a wide area. It will quite naturally, take many years to complete the full restoration of this valley, but if the present policy is rigidly adhered to in the future, the results will be well worth the effort.

E. F. BREWER,
Forest Officer,

3. Agricultural Chemistry Division and Central Distillery.

(a) *Laboratory.*

Routine Work.

As in previous years, routine work in the Laboratory consisted mainly in the examination of produce prior to export and of the examination of samples of fermented liquors submitted by the Excise Department. Various other samples, submitted by the Grand Anse Estates, Government Departments and the public were also examined.

A total of 880 samples were examined, involving some 4,460 determinations. The corresponding figures for 1949 and 1950 were 342 and 345 samples respectively. The large increase in the routine work of the laboratory during 1951 was due to the control of the quality of cinnamon leaf oil prior to export. Some 620 samples of cinnamon leaf oil were examined, 6 of which were found slightly adulterated with mineral oil (Kerosene). The last two cases of adulteration were detected in May, 1951 ; since then no more cases have been detected. Out of the 151 samples of fermented liquors examined for the Excise Department, 46 were found to be "La Purée", which amounts to 30%. The corresponding figures for 1949 and 1950 were 46.2% and 35.9% respectively.

The Agricultural Chemist continued to supervise the work of the Produce Inspector at the Custom Sheds. Produce coming under the care of the Produce Inspector are : Copra, Cinnamon Bark, Salt Fish and dry Patchouli leaves. The main work of the Produce Inspector consists in the control of the quality of copra deposited for export. A strict control was maintained ; every lot of copra deposited was carefully examined. In all 25 lots, after inspection with assessors and after examination in the laboratory, were declared unfit for export and were returned to the manufacturers. Eight lots of dry patchouli leaves were examined and the samples collected from them were tested in the Experimental Distillery of the laboratory. The usual permits and certificates for copra, essential oils, cinnamon bark, salt fish and dry patchouli leaves were issued.

Research Work.

Little research work could be carried out in 1951. This was due to the considerable increase in the routine work of the laboratory and to the resignation of the laboratory assistant early in 1951, when all the routine work had to be carried out by the Agricultural Chemist. A new laboratory assistant was appointed in April, but had to be trained and acquired a reasonable standard of efficiency after several months of training. As a result, research work on the main Seychelles soil groups, which had been started in 1950, could not be resumed.

Experimental distillation of cinnamon bark oil was carried out, with a view to producing a soluble oil. The problem to be solved consisted in determining what proportion of the first distillates, rich in insoluble terpenes, should be discarded to produce a soluble oil. Unscraped Cinnamon bark three to five years old, the usual class of bark produced in the Seychelles, was used for the experiment. Two series of distillations were carried out. In the first case the oil condensed with the first 10% aqueous distillates was discarded, while the oil condensed with the first 12% aqueous distillates was discarded in the second case. Samples of oil produced in this experiment were sent to the Imperial Institute for examination. A report received late in the year described the samples as unsatisfactory.

Following recommendations by the Institute, new experiments will be carried out in 1952, using scraped cinnamon bark and making use of a slower distillation rate.

A sample of ambrette seed oil, prepared in the Labaratory from the seeds of *Hibiscus abelmoschus*, was forwarded to the Imperial Institute for examination and report. This sample was found unsatisfactory. Ambrette seed oil, which is produced mainly in France, has a very limited market and necessitates specialised apparatus and specialised knowledge for its production. There is therefore, no likelihood of the successful production of ambrette seed oil in the Seychelles.

Fumigation experiments against *Mellittomma Insulare*, the coconut borer, and copra and maize store insect pests were carried out, using gammexane smoke generators, No results were obtained against Melittomma larvae, when infested coconut trunks were fumigated. On the other hand fair success was obtained against the copra and maize store insect pests. The following species were found to be susceptible to the Insecticides :—

COLEOPTERA	LEPIDOPTERA
Ozyzaephilus surinamensis L.	*Ephestia cautella* Walk
Dermestes cadaverinue F.	
Necrobia rufipes de G.	

Suspensions of parathion in water, the systimic insecticide O, O-diethyl-o-para-nitrophenyl thiophosphate, were used in an experiment against *Melittomma*. Infested coconut trees were watered with suspensions of the insecticide. It was hoped that absorption of the insecticide by the coconut roots would cause the eventual death of the *Melittomma* larvae inside the coconut trunks. No conclusive results were obtained. Further experiments are needed,

Preliminary investigations on the mineral content of toddy, the sap collected from undeveloped and bruised coconut inflorescenses, were carried out. Weekly samples were examined for total nitrogen, potash and phosphoric acid as well as for total sulphated ash. Rainfall seems to have an important bearing on the mineral content of toddy, as illustrated by the variation of the total sulphated ash and its various constituents with rainfall. The most important mineral constituent of toddy is

potassium. The results obtained show an average content of 0.169 grms. potash (K2O) % mls. toddy for an average total sulphated ash content of 0.444 grms. % mls. toddy, which amounts to 38.06% K20 in total sulphated ash. The corresponding figures in the case of nitrogen and phosphoric acid (P2 O5) are 6.53% and 3.15% respectively. It is intended to carry further investigations, to find out whether the determination of the various mineral constituents of toddy could not be used to obtain information on the nutritional status of coconut palms growing under varying conditions of soil fertility.

A sample of sediment, suspected to contain a large proportion of metallic constituents, collected at Foret Noire Mahe, was forwarded to the Mineral Resources Division of the Imperial Institute for examination. A report received late in the year shows the sample to contain 36% ilmenite which, on assay, was found to contain 48% titanium oxide (TiO2). Ilmenite is in great demand in England, Europe and the United States, its principal use being in the manufacture of titanium pigments. However, as no extensive deposits of this material occurs in the Seychelles and as it is a rather cheap commodity, it presents little economic interest.

(b) Central Distillery.

During 1951 the Central Distillery was engaged almost exclusively on the distillation of patchouli oil for planters and dealers in essential oils. The only other oil distilled during the year was cinnamon bark oil. in a series of experimental distillations.

As shown in the table below, the Central Distillery has had a busy year. From January to April large stocks of patchouli leaves were deposited for treatment. In May, with the fall in value of patchouli oil and with a falling market, small quantities of leaves were received, This continued up to October, during which the distillery worked sporadically. In November, and December, following an increase in the value of patchouli and with better market conditions, large quantities of patchouli leaves were once more received.

The following table shows the quantities of patchouli leaves and other materials dealt with at the Central Distillery during the last three years, as well as the yearly averages of oil obtained per ton of materials, As will be noted, there was a good improvement in the yield of patchouli oil during 1951.

	1949		1950		1951	
Material.	Wts. of materials Tons.	Av. Yield in litres per Ton.	Wts. of materials Tons.	Av. Yield in litres per Ton	Wts. of materials Tons.	Av. Yield in litres per Ton.
Cinnamon leaves	6.597	8.2	44,578	6.8	...	—
Pathouli leaves	9.883	48.2	38.522	49.3	58.966	51.4
Eucalyptus leaves.	5.187	15.2	1.666	14.1	—	—
Cinnamon bark	—	—	1.500	4.8	4.870	4.4

G. LIONNET,
Agricultural Chemist.

4. Grand Anse and Unleased Crown Lands.

The Department continued in the management of the Government owned group of Estates known collectively as the Grand Anse Estates and in the general supervision and development of the Unleased Crown Lands.

Details concerning the composition of these Estates are as follows:—

Name of Estate	Area in acres	Date purchased	Land Utllization.
Grand Anse	1.180	1939	Coconuts, Cinnamon, Foodcrops. Sugarcane, Soil Conservation, Cattle, (Sindhi and Local).
Souvenir	200	do	Vegetables, Fruit, Cinnamon, Cattle.
Anse Boileau	1,032	do	Coconuts. Cinnamon, Foodcrops, Sugarcane, Cattle : Friesland, Sindhi-Friesland cross, and Local), Pigs.
Foret Noire	928	do	Coconuts, Cinnamon, Foodcrops, Sugarcane.
Union Vale	240	1944	Experimental Station in Soil Conservation, pasturage and Dairying.
St. Anne Island	500	1948	Coconuts, Cattle, (Friesland-Sindhi cross breds) under ranching conditions. Large White Pigs.

Coconuts and Copra.

The total number of coconuts collected during the year was 1,807.267. A total of 249,094 tons of copra was produced of which 211,996 tons were exported and 37,096 tons were converted into oil and poonac (coconut cake). Continued attention was given to supplying vacancies and to interplanting in coconut groves. Some 2,000 seedlings were planted on the various Estates.

Food Crops and Vegetables.

The intensive planting of food crops and vegetables was continued following the policy set out during the World War II for maximum food production. The 20 H. P. standard Ferguson Tractor purchased in 1949 is doing very good work on the West Grand Anse Estates.

Trials of planting beet and carrot on a large scale have been very successful both at Anse Boileau and Grand Anse during the South East monsoon. The cabbage crop promised well but a serious attack of black rot disease ruined the crop. This year the fruit crop has been very good. The production has nearly doubled with comparison to last year. The citrus crop is a record crop. The Wizard simplex fans and oscillators have not yet been received but are expected soon. The irrigation scheme at Foret Noire Estate made good progress. The scheme is for the irrigation of the plateau and cultivated slopes at the "Deux Arpents" Area, and the terraces which are to be started in January 1952. The production of food crops was maintained in the interest of the public generally.

The following table records production figures of food crops and vegetables : —

Description.	Production.
Cassava	9,258 tons.
Sweet Potatoes	16,633 ,,
Yams	18,189 ,,
Cabbages	2,361 ,,
Maize	2,186 ,,
Mixed Vegetables	26,448 kilos.
Fruit, Bananas	71,359 units.
Citrus	59,826 ,,
Pawpaws, Mangoes, etc.	4,991 ,,

Cinnamon.

Cinnamon leaf crop collected and distilled at Grand Anse Distillery was as follows :—

Estate.	Weight of leaf Tons.
Grand Anse	230.3
Anse Boileau	137.1
Foret Noire	116.6
	= 484.0 Tons.

The new still was installed at the beginning of the year which increases the capacity by about 500 kilos per charge. The labour for picking cinnamon was scarce,

Sugarcane and Bacca

The area under sugarcane fields were replanted. At the end of the year due to the big demand for cane the estates were unable to supply the amount required by the Bacca Club. 540.839 tons of sugarcane were supplied to Bacca Club and 117 tons milled on the estate for production of bacca for consumption at the centres at Grand Anse and Anse Boileau.

Livestock and Livestock Products.

Full details of the activities on estates and at the Union Vale Dairy are given in the report of the Veterinary Officer.

Buildings.

5 model cottages were built for labourers during the year. At Grand Anse the house of the Development Officer was completed, and at St. Anne the masonry work of the Manager's house was completed. A second pig sty was erected at St. Anne, and a new poultry run built at Anse Boileau.

E. MASON,
Development Officer.

(b) *Unleased Crown Lands.*

Part of Curieuse Island continued to be managed by the Department as a coconut island, the other part, constituting the leper settlement, being under the administration of the Medical Department. The number of nuts collected was 247,025, and 15 tons of copra were exported.

The Outlying Islands of the Aldabra Group were exploited for fish, turtle and mangrove posts. The Forest Officer visited the islands in March, 1951, and made recommendations for the development of natural resources of the group. It is proposed to purchase a powered boat fitted with an inboard coventry engine, and an Anzani 15 H. P. outboard engine to facilitate work in the 18 mile lagoon of Aldabra.

The following produce from the islands were marketed in Victoria.

Turtles	434 units
Salt Fish	22 tons
Calipee	390 kilos
Mangrove posts	14,000 feet.

5. Botanic and Town Gardens.

On the whole the weather was not very favourable for gardening operations. The torrential rains experienced resulted in flower beds being washed, and in an unsatisfactory condition of weed growth. It was extremely difficult to maintain and to keep the various grounds in good trim. Fortunately during the drier months it was possible to establish annuals effectively in beds and borders of the decorative sections. Among the various annuals Sutton's Asters were an outstanding show, and the beds of mixed colours were much admired by visitors. Unfortunately Zinnia beds suffered very heavy losses through wilt. More varieties of roses, dahlias and orchids were added to the collection at the Botanical Gardens.

On account of the transfer of prison labour to other works, Government House Grounds labour force had to be increased to maintain the ornamental sections and lawns in a satisfactory condition.

6. Extension Work.

The Department continued its work in soil conservation, mixed farming, and food production. Better coconut husbandry was emphasized, and the complementery use of coconuts and livestock recommended during visits to estates.

Planting material was supplied to all districts upon application. A large variety of European vegetable seeds imported in bulk from South Africa and the United Kingdom were retailed to the public. Demonstration vegetable gardens were maintained at Union Vale and Mamelles in the Town area in order to increase interest in the production of protective crops. An experimental vegetable gardens was opened at La Digue in November.

Extension work in animal husbandry received considerable impetus during the year. The Union Vale Dairy continued to supply selected graded stock to farmers. Piglets of the Large White breed continued to be distributed extensively, and it can safely be said that good progress has been achieved with this breed which finds favour even on the Outlying coral islands of the archipelago.

SECTION III. LEGISLATION.

The following legislation was enacted during the year :—

Ordinance No. 1 of 1951 :	An Ordinance further to amend the Copra Price Stabilization Ordinance, 1949, (Ordinance No. 14 of 1949).
Ordinance No. 8 of 1951 :	An Ordinance to amend the animals (Diseases and Importation) Ordinance, 1950 (Ordinance No. 23 of 1950).
Ordinance No. 9 of 1951 :	An Ordinance further to amend the Cultivation of Sugar Cane and the Manufacture and sale of Bacca, Ordinance, 1937 (Ordinance No. 22 of 1937).
Ordinance No. 16 of 1951 :	An Ordinance further to amend the Seychelles Agricultural Bank Ordinance, 1937 (Ordinance No. 1 of 1937).
Ordinance No. 25 of 1951 :	An Ordinance to amend the Cultivation of Sugar Cane and the Manufacture and sale of Bacca Ordinance 1937 (Ordinance No. 22 of 1937).

SECTION IV. STAFF AND GENERAL.

Mr. F. Durocher Yvon was appointed Director from 1st April, 1951.

Mr. E. Mason, a diplomate of the Mauritius College of Agriculture took up his appointment as Development Officer, Grand Anse Estates, in July, and Mr. R. Mullery was appointed Accountant to the Estates in November.

Mr. D. Morgan, Agricultural Assistant in charge of the Government Dairy, proceeded to Mauritius on a 6 months' course in Animal Husbandry and Veterinary Science in November.

The Department continued with a very much under-staffed clerical section. Mr. J. Laye Sion, Chief Clerk, was transferred to the Secretariat, and Mr. D. Pothin, Grade II Clerk, acted as Chief Clerk.

I wish to record my appreciation of the assistance and cooperation received from all members of the Staff and also from members of the planting community. I extend my thanks to the local press which assisted materially by giving publicity to the Department's work.

F. DUROCHER YVON,
Director of Agriculture.